

SURVEY OF THE GEOLOGY OF HAITI

GUIDE TO THE FIELD EXCURSIONS IN HAITI

OF THE

MIAMI GEOLOGICAL SOCIETY

MARCH 3 - 8 , 1982

By

Florentin J-M.R Maurrasse
Florida International University
Miami, Fl. 33199

Road Log Excursion One
report section from maurrassee1982

coast of the Southern Peninsula in Haiti, and at the Llanura costera del Caribe (Figure 2) at the southeastern end of the Central Cordillera physiographic unit (cf. section on physiographic provinces).

The terraces of the island have not yet been studied as extensively as those of other Caribbean islands where similar raised reef terraces occur, as for instance the well known and well-studied Barbados terraces. As pointed out earlier, the island is seismically active and much tectonic activity has taken place in the Late Pleistocene, but not much is known about the rate of vertical displacement during that time. A recent study in the Mole Saint Nicolas areas has brought some direct evidence of fast uplift in the region. Dating of the lower series of terraces in this area shows that the most prominent terrace cresting at 52 meters gives Th_{230} / U_{234} dates on unrecrystallized Acropora palmata which average $126,000 \text{ yrs} \pm 5000 \text{ yrs B.P.}$ Assuming a sea level of 6 meters above present level (as it has been reported in the literature) at 125,000 years ago, the date gives an uplift rate of 37 cm. per 1000 yrs. Such a rate makes the Northwestern Peninsula of Haiti, the site of fastest reported uplift in the Caribbean (Dodge et al., 1981). Fast uplift in the northern regions is in sharp contrast to nearly negligible uplift rate recorded in the southeastern regions of the island. The difference has been attributed to crustal tilting from each other side of the Cayman trench (Horsfield, 1977).

ROAD LOG TO EXCURSIONS

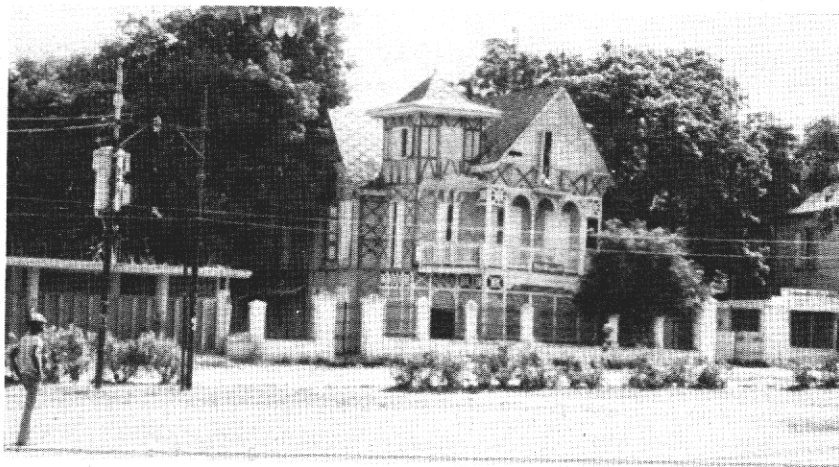
EXCURSION ONE: PORT-AU-PRINCE - JACMEL

The city of Port-au-Prince is built over conglomeratic series of the Riviere Grise/Delmas Formations which became emergent during the Pleistocene. As you can see from figure 3, the city is built along the edge of one of the major fault systems which mark the southern boundary of the Cul-de-Sac/Enriquillo graben.

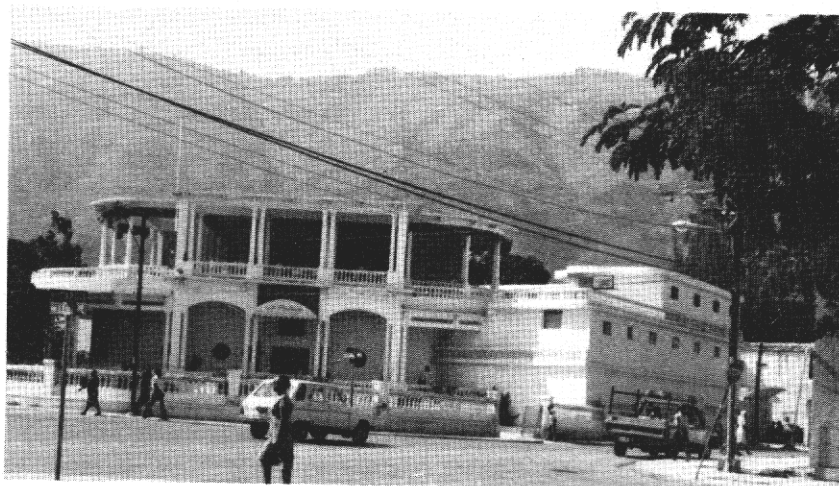
Most of the bedrock is Miocene or Pliocene, as discussed in the section on the formations. The nature of the bedrock here has provided excellent physical conditions for the rapid expansion of the city. The clastic deposits are indeed easy to excavate and exhibit high porosity and permeability. Such properties are particularly advantageous as the entire city uses only septic tanks and privies. The presence of easily accessible calcareous breccia along the fault zone has also been a major determining factor in the rapid expansion of Port-au-Prince. The most recent architectural style attests to this change, stone and concrete structures are rapidly replacing the old Victorian style gingerbread houses (Figure 22). The calcareous breccia or Laboule sand (Maurrasse and Pierre-Louis, 1982), occurs in great abundance throughout the foothills of the La Selle Mountain which forms the backdrop of the city.

The center of the city from the main square down to the bay is built on conglomerates of a huge holocene fan developed at the mouth of several dry channels, and particularly the one called Ravine Bois de Chene. This fan slopes gently (Figure 22c) toward the bay where its delta is still transgressing quite rapidly. It has transgressed more than 200 meters during the past 25 years. The sedimentary processes presently taking place in this

FIGURE 22



Gingerbread victorian house, Port-au-Prince.



Concrete and cement block structure, Port-au-Prince.



Gently slopping topography typical of the distal zone of the alluvial fans which constitute the substratum of downtown Port-au-Prince. Photo taken near the national Palace looking west toward the bay.

bay are excellent analogs of those which gave rise to the detrital sequences known as the Riviere Grise/Delmas Formations, as previously mentioned.

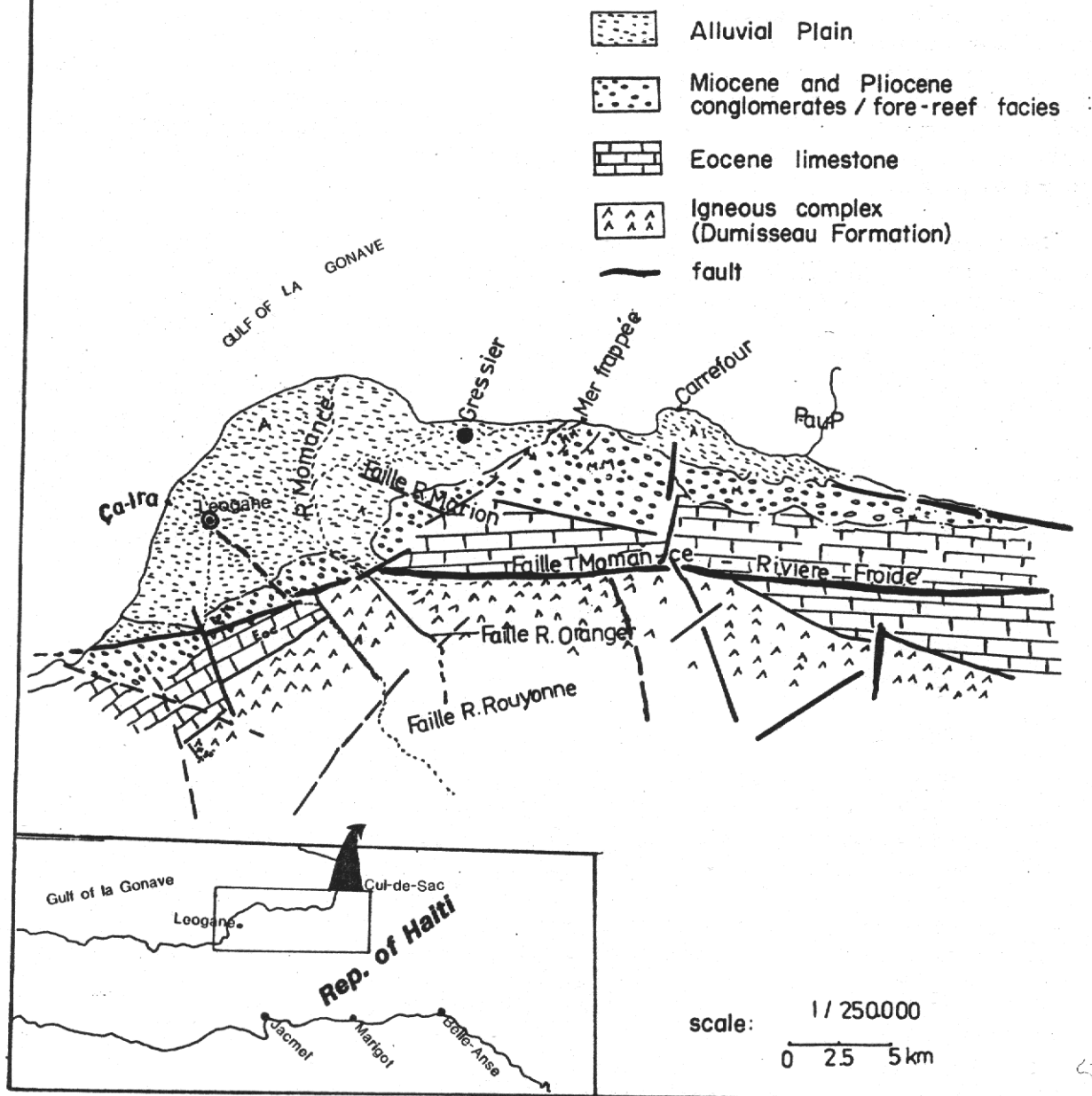
As we proceed westward toward Carrefour, the western suburb of Port-au-Prince, you will notice on the left side of the road, steep talus fans which are still transgressing over the upper Neogene series. These fans have developed and are still developing along the edge of the Morne l'Hopital horst (the mountain in the immediate backdrop of the city). Accelerated growth of these fans during the late Pleistocene is related to renewed uplift in the area at that time. Like the larger fan over which most of down town Port-au-Prince is built on, these steeper fans were also formed by rapid deposition from dry channels which may be transformed into raging floods of muddy water carrying a heavy load of coarse rock-fragments from the upland region during the rainy season.

Because most of the geologic outcrops in this coastal region are hidden by urbanization, the logging of observable features will start from the bridge crossing Riviere Froide at Carrefour. In figure 23 you may notice the small promontory associated with the transgressive delta of Riviere Froide. The alluvial plain formed by this delta is very visible from plane view as one approaches Port-au-Prince for landing. This delta is about 5 kilometers wide, and slopes gently to the shore from an altitude of 30 meters at the bridge.

- 0 Km. Bridge crossing Riviere Froide on Nationale 1.
- 1.76 Km Left side of road, slope wash conglomerate at crossing
 of railroad.
- 3.7 Km Outcrop of thinly bedded limestone and chalk at the
 locality called Mer Frappee and similar to section shown
 in figure 20.
- 4.5 Km STOP 1 : Le Lambi

From this area westward there are good exposures of pelagic limestones and chalks of middle to late Miocene age. The rocks are essentially partly indurated foraminiferal biocalcilitite. At this locality the exposure is about 75 meters thick and is fractured. The lower part of the sequence yielded a rich planktonic foraminiferal fauna of the middle Miocene Globorotalia mayeri Zone, including a few reworked Oligocene taxa. The youngest levels indicate a late Miocene age, possibly in the Globorotalia acostaensis Zone. The predominance of planktonic foraminifera up to the middle portion of the sequence indicates eupelagic conditions until the end of the middle Miocene. Conditions seem to have changed significantly within the late Miocene when the foraminiferal assemblages become enriched in benthonic foraminifera. Benthonic organisms, including some ostracods, and echinoid debris, become gradually predominant toward the upper part of the series. The absence of coral fragments, however, indicates that shallowing was not adequate over this site

FIGURE 23 - Plaine de Leogane and adjacent areas



to allow coral growth. The depths were still neritopelagic, away from any terrigenous influence as well. Because there is a rapid change in depth recorded in this area within the late Miocene, whereas other areas within the La Selle-Baoruco block remained essentially pelagic at that time, it is clear that this larger tectonic unit comprises smaller sub-blocks which behaved differentially through time. Lithofacies found in this stop are comparable to the Neiba type of facies. They also grade into facies comparable to the Florentino Formation (Bermudez, 1949) in the Dominican Republic.

4.8 Km Recurrence of the limestones seen previously. Here they are capped with modern slope wash.

4.9 Km Chalky conglomerate.

10.0 Km STOP 2 : Morne à Bateau

This locality is only about 5.5 Km away from the preceding stop but here the facies are distinctly different. It is the continuation of the shallowing trend observed before. However, here sedimentation was also influenced by terrigenous input, most likely from the paleo-Momance River. Like for localities farther east and west, terrigenous supplies were sporadic, and only the distal part of turbidites reached this area. As pointed out by Woodring et al., 1924, here the sequence consists of alternating beds of dark yellowish sand and clay, and calcareous conglomerate which is composed of lumpy aggregates of coral and mollusk fragments. Benthonic foraminifera and well diversified ostracod fauna may also predominate at certain levels. A few bryozoan and echinoid fragments also occur among the coarse components. Beds composed of finer constituents include diverse planktonic foraminiferal assemblages, but most of the specimens are remarkably small. The planktonic foraminifera indicate an age ranging from the latest Miocene Globorotalia dutertrei Zone to the early Pliocene Globoquadrina altispira Zone. A few reworked Eocene and Oligocene taxa also occur in the series.

It is apparent that the sequence at this locality accumulated on or near a slope in a neritopelagic environment which was intermittently affected by terrigenous and bioclastic subaqueous flows. The basin edge was characterized by prolific coral growths, probably fringing reefs developing along the edge of a steep and narrow margin. The coastal area was apparently a high energy environment, as suggests the highly fragmented state of the benthonic foraminifera and the other benthic

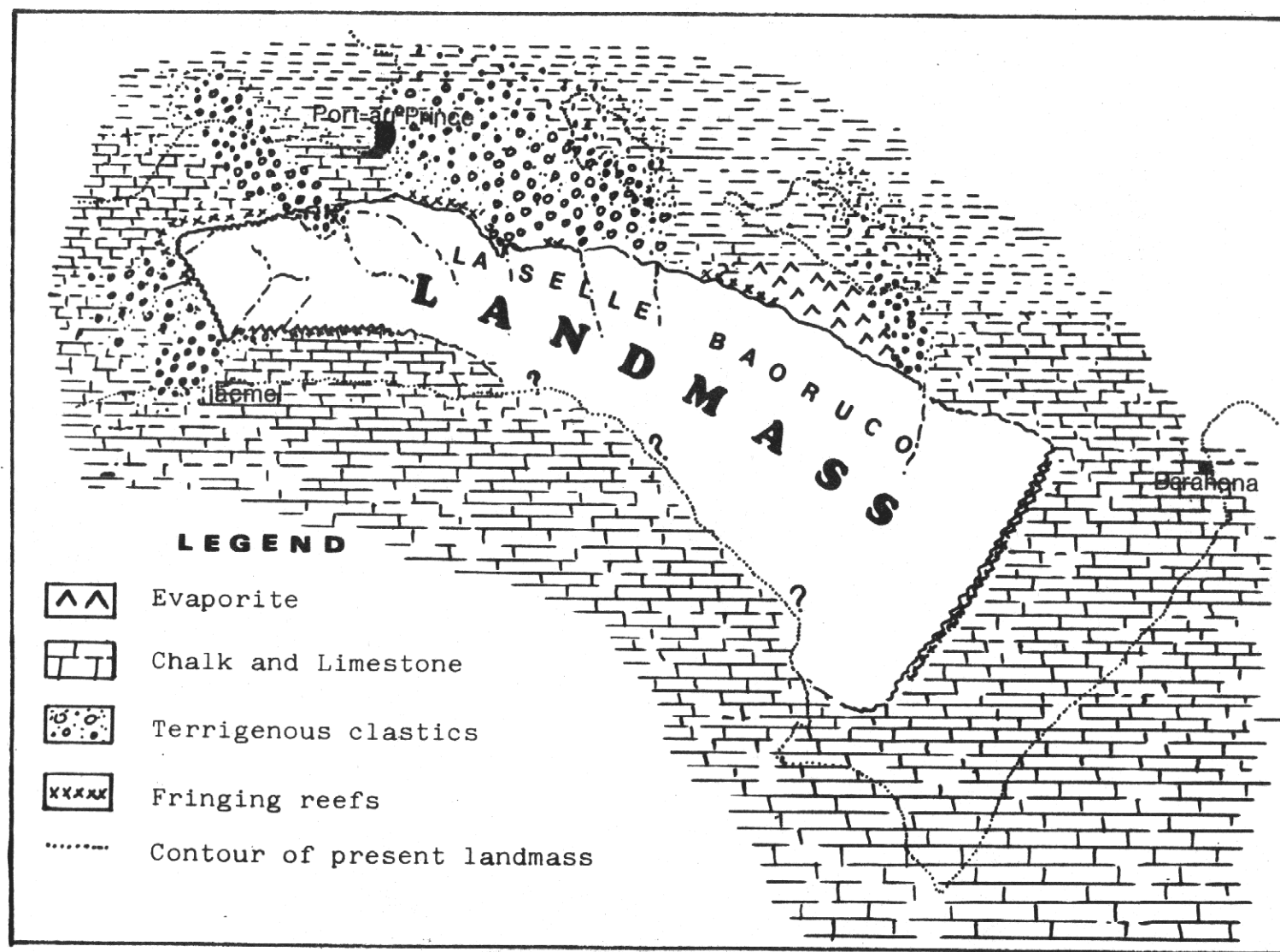


FIGURE 24 : Paleogeography and lithofacies distribution around the La Selle-Baoruco block during Middle and Late Miocene.
(After Maurrasse et al., 1982b)

components. A paleogeographic reconstruction for the time of deposition of these facies is given in figure 24.

13.0 Km

Gressier. This small town is located at the eastern rim of the Leogane Plain. Small hills in this area are of the same facies as at stop 2.

We proceed into the Plain of Léogane. As can be seen in figure 23, this plain is the result of prograding sediments deposited by three deltas related to Riviere Cormier at the western end of the plain, Riviere Rouyonne in about the center, and Riviere Momance at the eastern edge. The effects of the Momance River has been predominant and the plain grew asymmetrically toward the delta of this river (figure 22).

19. 7 Km

Crossing of the bridge on River Momance. Note braided nature of the river caused by excess load due to accelerated erosion in the deforested upland areas.

24. 1 Km

Entrance of the city of Léogane, which lies to the right in about the center of the plain. This city is the site of the Pre-Columbian Arrawak city of Yaguana, now distorted and called Léogane since colonial times. Yaguana was the capital city of the Xaragua, which was governed by queen Anacaona when Colombus arrived in the island.

31. 2 Km

Crossing of bridge on Riviere Cormier, immediately north of the junction with the road going to Jacmel toward the left.

Road post 43 Km from Jacmel, south of Carrefour Dufort.

END OF ROAD LOGGING BASED ON BRIDGE CROSSING RIVIERE FROIDE ON NATIONALE ONE.

NEW LOGGING USES DISTANCES AWAY FROM JUNCTION ROAD TO JACMEL AND NATIONALE 1

0.5-1.0 Km

STOP 3 : Foothill, immediately south of Carrefour Dufort.

This section is similar to outcrops near Fauché farther west (Figure 20), or about 3 kms west of Fauché. Both areas include a relatively well developed sequence of bedded neritopelagic limestone and chalk reminiscent of the facies found along the eastern end of the La Selle-Baoruco block, in the Dominican Republic (Figure 1) (Maurrasse et al., 1982b). In both areas the limestones comprise large amounts of coral fragments within the younger series, as shown in the composite sections of figures 19 and 20.

The limestone layers consist of packed foraminiferal biomicrite, including about 5 to 50 percent benthonic foraminifera. Ostracods are also relatively common, although they do not exceed 1 percent of the coarse fraction greater than 44 microns. Echinoid and coral fragments are virtually absent in the older portion of the sequence, becoming abundant at certain levels in this outcrop. Planktonic foraminifera indicate an age ranging from the latest Miocene Globorotalia dutertrei Zone, to the Late Pliocene Globorotalia tosaensis Zone.

This sequence indicates that neritopelagic conditions prevailed at this site at least until the early Pliocene. The Pliocene portion shows that extensive fringing reefs must have also developed at that time. Numerous layers of reef rubble in the fore reef zone further indicate a high energy environment of deposition, or storm deposits. The youngest levels including coral rubbles contain large fragments of Acropora Palmata, indicating the development of fringing reefs similar to modern reefs in the present offshore area adjacent to these localities.

This area became emergent either during the latest Pliocene or the Pleistocene. In the present topography the Neogene rocks crop out at a maximum elevation of about 75 meters above sea level

From here on the road climbs rather steeply into the backbone of the Southern Peninsula. Two or three kilometers uphill you will already be able to observe igneous rocks of the Dumisseau complex. We are also crossing a very disturbed area which is the westernmost end of the Momance-Riviere Froide Fault system (Figure 8, 23)

2.0 Km STOP 4 : LABOULE SAND QUARRY

(near road post 41 Kilometers from Jacmel)

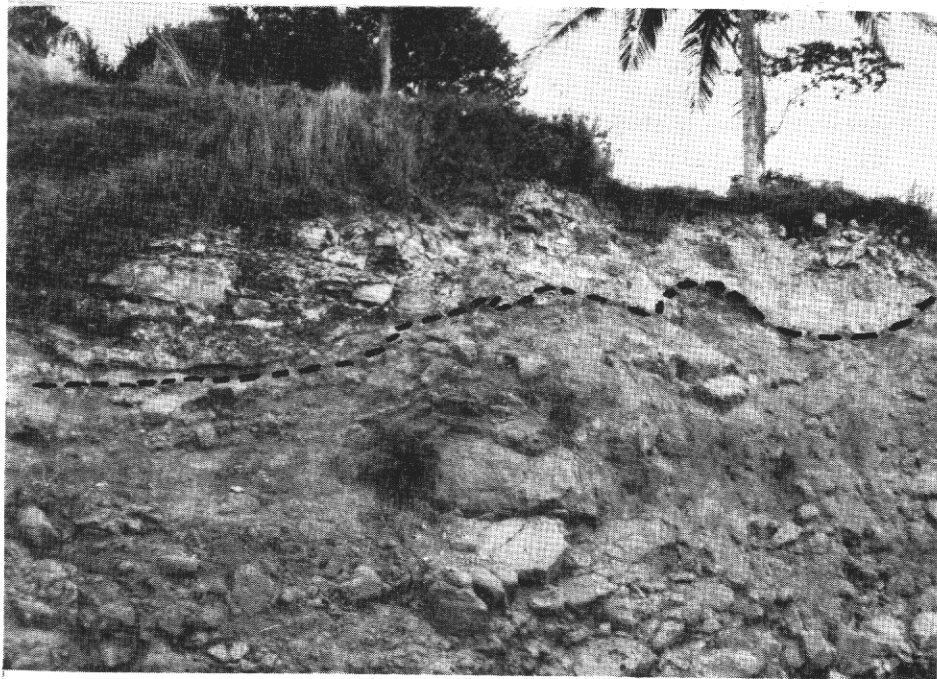
Here the Momance - Riviere Froide fault transects the mountain flank and gave rise to limestone breccia called the "Laboule Sand", after the name of the locality of Laboule south of Port-au-Prince where it was first quarried.

You may also observe an outcrop of Campanian foraminiferal- nannoplankton chalk overlying deeply weathered igneous rock of the Dumisseau complex. The nonconformity shows a very short transitional zone including fragments of the underlying igneous rock, and shallow-water organisms. The chalk contains a rich planktonic foraminiferal fauna, and

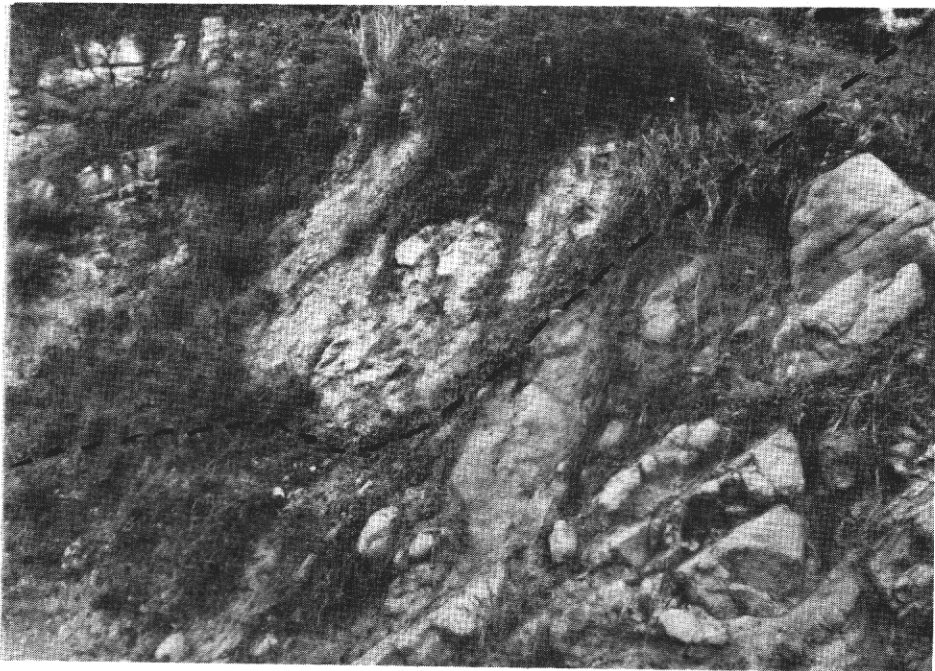
a fairly large number of euhedral clear spinel crystals. Farther up the road (about 1.6 kilometers from here) the chalk facies changes into thinly bedded limestones and chalks which yield a foraminiferal assemblage of the Trinetella scotti Zone, or Late Maastrichtian age. Modern analogs of such chalks are found in the eupelagic marine environment of the Caribbean Sea at depths of 2000 meters or more. Thus, here there is clear evidence that eupelagic environments lasted through the latest Cretaceous, as will be seen further in subsequent stops. This implies that tectonic disturbance in the area took place prior to the Maastrichtian

As we proceed upward along the steep slope look toward the right and contemplate the magnificent drop off related to the scarp of the Trans-Xaragua fault system which transects exactly along this area.

- 3.00 Km. Fault breccia developed in the more brittle shallow-water limestones of Tertiary age. Note the extensive karst features which developed in the fractured limestones.
- 4.10 Km. (Location near road post 39 Kilometers of Jacmel). Columnar basalts occur in the dry valley on the right side of the road. From here onwards to Beloc there will be extensive outcrops of the Dumisseau complex, as can be seen for instance between 12.5 and 13.00 kilometers (figure 9). There, the Coniacian limestones are completely dislocated, becoming independent blocks mixed within the equally dislocated igneous rocks (see also paragraph on Dumisseau Formation).
- 14.4 Km. STOP 5
- Large outcrop of steeply dipping to vertical Coniacian limestone. A thin doleritic sill also occurs parallel to the bedding plane of the limestone layers.
- 16.2 Km. A major northeast-southwest trending fault cuts across this area. Slightly farther you may see spheroidal weathering of the igneous rocks. Also observe a thick medium coarse volcanogenic conglomerate believed to be the distal equivalent of the coarser basal conglomerate reported at the type section of the Beloc Formation. Minor hydrothermal mineralisation of manganese also occurs in this area.
- 17.5 Km. Here the Dumisseau Formation is unconformably overlain by middle Maastrichtian chalk and limestone (Figure 25) intercalated with intrabasinal volcanogenic turbidites with a chalky matrix which contain abundant reworked Campanian fauna (Globotruncana carinata, Globotruncana elevata, and others). The contact between the Maastrichtian chalk and the volcanogenic turbidite also shows minor



a



b

FIGURE 25 : Angular unconformity between medial Maastrichtian limestone and chalk, and the Dumisseau complex near Béloc, Southern Peninsula of Haiti (STOP 6).

hydrothermal alteration with manganese oxides as the prevalent minerals. Manganese is pervasive in the chalk but does not form a crust as it usually occurs in deep-sea environments where such concentration is often associated with bottom currents and periods of non-deposition. Hydrothermal activities in this area were most likely related to fissure eruptions during the early stages of the Trans-Xaragua fault system which may have been activated during the pre-Campanian or early Campanian tectonic disturbance previously mentioned. As seen at stop 4, the chalk here is also rich in planktonic foraminifera, and includes numerous clear spinel crystals, and probably Galaxite (Manganese aluminum spinel) as well.

17.7 Km. STOP 6

Outcrop of the above described unconformity, which is shown in figure 25. Here the medial Maastrichtian series is unconformably overlain by early Tertiary shallow-water limestone without a basal conglomerate. This implies the development of bank, but not a total emergence. As indicated before, the early to Middle Eocene age of the shallow-water limestones and a continuous pelagic limestone sequence spanning the Cretaceous/Tertiary boundary give evidence only for a post Maastrichtian tectonic disturbance in the area. This tectonic event shows no record of the emergence of a land mass, nor does it show extensive shallowing throughout the Southern Peninsula. Only scattered banks appear to have been formed at that time.

18.5 Km. Village of Beloc. Note the calcareous breccia on the right side of the road where it is capped with lateritic soil. This type of calcareous breccia, or "Laboule sand" developed here along a northeast-south-west trending subsidiary fault.

19.5 Km. STOP 7

Outcrop of the Beloc Formation, immediately south of the hamlet of that name. The marker bed is much contorted and dislocated by multiple faults which transect the Formation throughout. Farther southward south-dipping gravity faults can be seen all along the road cut showing extensive outcrops of the Béloc Formation (figure 15), which occurs over more than five kilometers southward from the town of Beloc.

22.0 Km. STOP 8

Beloc Formation close to the standard section. Here the sequence is not folded it is affected only by minor displacements along gravity faults. The basal conglomerate which occurs in the Formation, crops out along the River valley, some 75 meters down from the road. The marker bed occurs about two-thirds the way up along the steep slope of the river valley at this location.

FIGURE 26



a

Shallow-water limestone conformably overlying deep-water chalk and limestone. Arrow points to narrow transitional zone. Near Découzé, Southern Peninsula of Haiti.



b

Karst developed in shallow-water limestone of Middle Eocene age. Near Découzé, Southern Peninsula of Haiti.

24.1 Km. Limit between "Departement de l'Ouest and Departement du Sud'Est" is also a fault controlled natural boundary: Note volcanoclastic basaltic conglomerate immediately south of the sign, on the left side of the road.

This fault here also marks the limit of the standard section of the Beloc Formation. To the left of here (i.e. toward the east) the section continues in the hills above. The summit of the amountain includes shallow-water limestones containing abundant benthonic foraminifera and common coral fragments. Those limestones are of Middle Eocene age.

As I pointed out before, since the Paleocene is continuous with the latest Cretaceous in the Beloc section, it is clear that here actual shallowing took place sometime within the Early Paleogene, and not at the end of the Cretaceous, Maastrichtian stage. Furthermore, as can be seen farther south of here, only part of the La Selle/Baoruco block became partially emergent, forming isolated banks at that time. The lower hills toward Jacmel indeed exhibit successively younger eupelagic limestones facies southward, the youngest series are of Pliocene, implying differential emersion of the block throughout the Cenozoic.

25.2 - 26.0 Km. Découzé. Note the deep lateritic soil which developed over the igneous basement complex of the Dumisseau Formation. Note also occurrence of calcareous breccia of the Laboule sand type, which always characterizes fault zones affecting the shallow-water limestone facies.

26.1 Km Immediately south of Découzé. Here lower Oligocene (Globigerina ampliapertura Zone) of the Neiba type of lithofacies rapidly changes upward into shallow-water facies (Figure 26). The foraminiferal biocalcarenite immediately above the deep water chalk, shows a fabric indicative of a subaqueous flow process. Shallowing of this area may have either brought the bottom of this site close to wave base or a current system was influential over the bank. Benthic foraminifera (Lepidocyclina) also suggest an Oligocene age for the calcarenite.

Shallowing may have been very rapid as the thinnly bedded eupelagic chalk is separated from the overlying biocalcarenite by less than 15 cm of transitional lithology (figure 26A). This Oligocene shallowing event thus bring further evidence of punctuated uplift as the main tectonic characteristic of the area.

27.0 km. Occurrence of chalk facies of the Jérémie Formation.

28.8 km. Fault contact between the younger pelagic facies to the south and the older Middle Paleogene biocalcarenite and biocalcirudite to the north. The biocalcirudite here contains distinct coral fragments and abundant calcareous algae, both indicative of a water depth of less than 50 meters for the bottom of the bank at this location.

31.8 km. Nerito-pelagic Limestone of latest Miocene to possibly earliest Pliocene age, Morne Castel section (figure 19). Note magnificent gravity thrust and folds in these limestones and chalks. These southwest dipping thrust faults evidently developed as a result of differential uplift of the area during latest Cenozoic.

32. km STOP 9 MORNE CASTEL

Neogene rocks occur up to an altitude of about 480 meters in this area. The rocks consist of thinly bedded foraminiferal-nannoplankton chalk, and packed foraminiferal biocalcarenite. The planktonic foraminiferal assemblages are well diversified and include taxa indicative of ages ranging from the late Miocene to the early Pliocene, Globorotalia margaritae Zone (including Globorotalia margaritae, Globoquadrina altispira, Globigerina bolli, Globorotalia siakensis, Gl. miocenica, Globigerinoides extremus etc.

This facies developed in a pelagic environment beyond the reach of terrigenous influences from the existing emergent La Selle-Baoruco block (figure 24). This lithofacies is much the same as limestones cropping out near the town of Enriquillo at the extreme southeastern end of the La Selle Baoruco block. It can also be compared to upper Miocene limestones found along the western edge of the Matheux Mountain range (Stop 12).

Note the numerous NE-SW trending faults which transect the mountain as the road proceeds downhill toward the valley of Grande Riviere de Jacmel.

33.8 km. Voluminous slope wash fanglomerate developed in fault zone which separates the Oligocene series from the Miocene rocks mentioned in preceeding stop. Note that the younger Miocene rocks in fact overstep this slightly down dropped portion of the La Selle-Baoruco block.

35.1 km. STOP 10 Eupelagic facies of the Jérémie Formation. The foraminiferal fauna is well preserved and includes taxa such as Globorotalia nana, Globoquadrina venezuelana, Globigerina ampliapertura, Globigerina opima, Globigerina angulisuturalis, indicative of early to Mid-Oligocene age.

Downhill the road crosses again disturbed medial Miocene limestones which underlie the conglomeratic deposits occurring at the foothills along the edges of the river valley.

35.4 to 36.1 km. Shallow-water limestones (biocalcirudite and calcarenite) unconformably overlie thinly bedded yellowish marl of Middle-Miocene age. Note again the intensity of brecciation in the more competent shallow-water facies as compared to a consistently more ductile deformation exhibited by the thinly bedded pelagic chalk. Fringing reefs apparently developed on the fractured nerito pelagic marl.

FIGURE 27



a



Polygenic conglomerate
in flood plain deposit
along eastern bank of
Grande Rivière de Jacmel,
Southern Peninsula of
Haiti

b

- 39.0 km. Outcrops of tan yellowish brown chalk of Middle-Miocene age (includes Globorotalia fohsi and Globorotalia mayeri).

This nerito-pelagic facies is overlain by a shallower-water conglomeratic series containing some coral heads. The latter deposit is in turn overlain by flood plain conglomerate (figure 7) of the paleo-Grande Rivière de Jacmel, probably deposited during Pleistocene higher sea stand. The fluvial deposits are characterized by their lack of fossils and the presence of primary sedimentary structures related to a varying flow intensity and pattern. The calcareous conglomerate here has its deeper-water equivalent northeast of Jacmel, at the low hills of Bodin, along the west bank of Grande Rivière. Outcrops of polygenic conglomerates at that location show well preserved chalky matrix very rich in planktonic foraminifera. The species include Globorotalia pseudomiocenica, Gl. plesiotumida, Gl. acostaensis, Gl. aff. humerosa, Globigerina nepenthes, Globigerina haitiensis, Sphaeroidinella subdehiscens, Sphaeroidenellopsis seminulina etc., indicative of a Late Miocene age. The abundance of the planktonic species is in sharp contrast to the scarcity of the benthonic species. This suggests a bathypelagic environment of deposition which was intermittently disturbed by terrigenous sediments from nearby rivers in flood. The steepness of the basin edge, plus dilution of surface water by rivers apparently prevented the growth of fringing reefs at this location. The present analog of such environments can be found along the eastern end of the La-Selle-Baoruco block where the Enriquillo-Cienaga-Paraiso fault (figure 3) cuts along the coast.

- 41.5 km. Locadi - Road cut displays a superb erosional channel filled with coarse polygenic conglomerate, in sharp contrast to the sparse and finer grained conglomerate, sandstone and marl underneath.
- 42.0 km. Thick flood plain deposits (figure 27). Note the size of some of the boulders which may be larger than 150 cm in diameter. The conglomerates include abundant limestone and basaltic pebbles characteristic of rocks from the nearby hinterland. Some layers, however, show predominance of basaltic pebbles, indicating fluctuations in the supply of the clastics. The variations were controlled by either differential weathering, or asynchronous flood stages of the mountain streams which are influenced by the orographic effects on the local rain system, as can be observed in present day conditions.
- 43.0 km. Entrance of the city of Jacmel. The city is built partially on flood plain conglomerates, older Pleistocene clastics, and poorly defined raised reef terraces. In places coral heads make up more than 30 percent of the polygenic conglomerate. Of the two levels of the city, the hillsides are underlain by conglomerate deposited by the Rivière de Jacmel during a higher sea stand of the Pleistocene, and the lower part represents a narrow coastal alluvial plain built

up during present sea stand. Note the nineteenth century charm still preserved in the numerous gingerbread buildings (figure 29).

EXCURSION TWO: JACMEL - PAILLANT

The Southern Peninsula is crossed once more to reach Carrefour Dufort.

HERE THE LOG IS BASED ON DISTANCE FROM CARREFOUR DUFORT, WHICH IS 37 KMS west of PORT-AU-PRINCE.

As we turn left to move westward along the northern side of the Southern Peninsula observe hills of Miocene - Pliocene limestones as discussed in Stop 3. Note disturbance in Middle Miocene rocks and faults scarp related to the prolongation of the Momance-Riviere Froide Fault in this area.

- 8.0 km. Crushed Miocene limestone and marl, much similar to the facies previously observed on the southern side of the Peninsula (see section of road log after Stop 10).
- 10.6 km. Carrefour Fauché. Northern extremity of the Jacmel Fauché depression. South of here, clastic deposits rich in coral fragments occur within the depression (figure 2-3). These rocks are part of the Rivière Gauche Formation (figure 19). Scarce planktonic foraminifera found in this lithofacies are not diagnostic of a very precise age, but suggest a late Miocene Globorotalia menardii Zone for the oldest exposed rocks. The predominately coralline beds are remarkably rich in delicate branching taxa (Porites, and possibly Acropora cervicornis) in the younger levels. The absence of wave resistant forms such as Acropora palmata at these levels may indicate an age older than latest Pliocene, for the top of the formation because the later species is not reported in the Caribbean until that time (Frost, 1972). This lithofacies was deposited in a marine channel that filled the trough of the Jacmel-Fauché depression until probably the latest Pliocene to Pleistocene. Intermittent tectonic disturbances along the fault-bounded trough appear to have caused sporadic slumps of huge quantities of reef rubble into the basin which was receiving large amount of clastics from the rivers and basin edge rock fall. These facies of the Rivière Gauche Formation are much reminiscent of the lithofacies of the Arroyo Blanco Formation (Bermudez) in the Azua Basin, near Fondo Negro, Dominican Republic.
- 13.0 km. "Tapion de Petit Goave" can be seen to the right, and in background are the mountains of Durissy toward the axis of the Peninsula, where rocks of the Dumisseau complex crop out extensively.
- 14.9 km. Entrance to the city of Grand Goâve, and bridge crossing river of same name.